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Transgender women and HIV-related health disparities: falling off the HIV treatment cascade

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Abstract. ***Background*:** Transgender women living with HIV infection experience poorer health outcomes across the HIV continuum of care. While disparities are well established, their underlying mechanisms are not well understood. This study examined the HIV continuum of care (also known as the HIV treatment cascade), including linkage and engagement in care and health status among transgender women and cisgender women and cisgender men living with HIV. ***Method*:** Case-control matching was applied to a cohort of 1101 people living with HIV; 70 transgender women living with HIV were matched on years since testing HIV positive with cisgender women and cisgender men. Participants provided measures indicative of the HIV treatment cascade that included linkage and engagement in care, receiving and adhering to antiretroviral therapy (ART), and HIV viral suppression. Common correlates of HIV-related health status: depression symptoms, HIV-related stress, alcohol and drug use, healthcare conspiracy beliefs, medical mistrust, emotional social support and tangible social support, were also assessed. ***Results*:** Transgender women were significantly less likely to receive ART, were less adherent to ART and had poorer HIV viral suppression than cisgender persons. Multivariable models demonstrated that health disparities were predicted by transgender women having poorer tangible social support over and above the other correlates of health outcomes. ***Conclusion*:** Tangible support is amenable by interventions such as building and strengthening supportive networks and paraprofessional services. Socially supportive interventions should be considered critical in efforts to decrease HIV health disparities among transgender women.

Additional keywords: HIV infection, HIV treatment, linkage to care, adherence, care continuum.

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Introduction

In the United States (US), minority groups are hardest hit by HIV, have the poorest health outcomes among people living with HIV, and have the shortest life expectancies.[1,2] HIV health disparities are particularly pronounced among sexual minority subgroups, with studies showing an expanding chasm in HIV-related health outcomes between cisgender women and cisgender men and their transgender counterparts.[3,4] An estimated one in five women who identify as transgender in higher income countries, including the US, are living with HIV,[5] with more than double the HIV prevalence among African–American transgender women.[6]

Transgender persons experience health disparities across every step along the HIV continuum of care, also referred to as the HIV treatment cascade.[7] People living with HIV who identify as transgender are less likely to be: linked to care,[8–12] retained in care,[13,14] receiving and adherent to antiretroviral therapies (ART)[15,16] and HIV viral suppressed.[17,18] One study conducted in New York City found that people who identify as transgender demonstrate greater delay in linkage to HIV services and have lower probability of achieving viral suppression within the first year of HIV diagnosis relative to cisgender men who have sex with men (MSM).[11] Similarly, poor engagement in care and suboptimal ART adherence are observed among transgender youth living with HIV relative to HIV-positive cisgender youth.[19] In San Francisco, 87% of HIV-positive transgender women were receiving HIV care, with 65% prescribed ART and 44% HIV viral suppressed.[18] In this study, housing instability was associated with poor health outcomes among transgender persons.[18] However, housing instability predicts poor health outcomes among cisgender people living with HIV and may not differentially affectthe health of transgender persons.[20–22]

HIV-related health disparities among gender subgroups that fall along the HIV cascade may be explained by multiple and simultaneously occurring risk factors. Syndemic Theory posits that two or more conditions interact synergistically to contribute to disease burden in a population.[23] The synergism of multiple psychosocial conditions that characterise syndemics offers a conceptual basis for understanding gender health disparities.[3] Studies show that depression and stress, for example, are prevalent among people living with HIV, and are associated

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with unsuppressed HIV and poorer AIDS-related mortality.[24,25] Furthermore, the association between depression and substance abuse with HIV treatment and health outcomes is likely accounted for by interference with treatment retention and medication adherence.[26] Individuals reporting recent use of alcohol, marijuana, cocaine and other drugs have greater odds of ART non-adherence compared with their non-substance using counterparts.[27] Furthermore, heavier drinking patterns relate directly to engagement in care, ART adherence and viral control, as framed by the HIV treatment cascade.[28] While mental health and substance use are known predictors of poorer health outcomes at each step of the HIV cascade, the degree to which these syndemic factors may differentially affect transgender persons relative to their cisgender counterparts has not been the subject of study.

In addition to the multiple and co-occurring conditions that characterise syndemics, social and contextual dimensions of healthcare systems are related to HIV health outcomes. Medical mistrust and conspiracy beliefs regarding medical providers, for example, impede ART adherence and health outcomes.[29–31] Medical mistrust may play a role in healthcare avoidance reported by transgender persons who commonly experience discrimination in healthcare settings.[32] Another critical social dimension to health disparities is social support. Tangible support, defined by having persons available to help out and offer practical assistance in times of need, is of particular importance in achieving linkage to care as well as ART adherence.[33] A case-matched control study of transgender women showed that tangible support was specifically associated with attending medical appointments and predicted HIV suppression, and these relationships were strongest among transgender women relative to their cisgender counterparts.[19]

The current study examined linkage/engagement to HIV care services, receipt and adherence to ART, and HIV viral suppression in a sample of transgender women living with HIV in a large city in the south-eastern US. Our study is conceptually guided by the HIV treatment cascade[7] and Syndemics Theory.[23] We conducted case-control matching on years since testing HIV positive to test for differences in health outcomes framed by the HIV treatment cascade among transgender women and cisgender women and men. We therefore compared gender subgroups on demographic, syndemic (e.g. mental health and substance use) and social/contextual (medical trust and social support) characteristics. We also sought to identify how intrapersonal and social factors were influencing health disparities at each step of the HIV treatment cascade. We hypothesised that transgender women would demonstrate poorer health outcomes at each step along the HIV treatment cascade relative to cisgender women and cisgender men, and that these disparities would be accounted for by differential effects of mental health, substance use and social factors.

Methods

Participants

Participants were living with HIV infection in the south-eastern US; 806 self-identified males, 294 self-identified females, and one refused to indicate sex. Recruitment occurred between December 2013 and March 2014. The study was conducted in Atlanta, Georgia, a major urban centre with an annual HIV incidence of 30.3 per 100 000 population. Eligible participants were age 18 years or older and living with HIV infection.

Measures

Demographic and health status

To define gender subgroups, participants were asked about their natal sex (as being either male or female), and in a second question, they were asked whether they identify as transgender, and if so whether they wanted to complete a version of the survey for men or women. We assessed demographic characteristics, the year they first tested HIV positive and 14 HIV-related symptoms.[34] To screen for hepatitis C virus (HCV) co-infection, we used the OraQuick rapid HCV antibody test.[35] We used a participant-assisted method for collecting chart abstracted viral load and CD4 cell counts from participants' medical records. Participants were given a form that requested their medical care provider's office provide results and dates of their most recent, and not older than 3-months, viral load and CD4 cell counts. These data were obtained directly by the participant from their HIV care provider. The form included a place for the provider's office stamp or signature to assure data authenticity.

HIV treatment cascade

Linkage and engagement in HIV care. We defined linkage to care by participants reporting that they currently have a HIV medical care provider. Consistent with clinical guidelines and previous studies of HIV treatment engagement,[36] we defined engagement in care by asking about the last time participants saw a HIV medical care provider, using a visit in the past 6 months to define engaged in care.

We also assessed multiple indicators of HIV treatment engagement. As suggested by Saberi and Johnson,[36] we asked participants whether they knew the value of their most recent CD4/T-cell count and their most recent HIV viral load. We also asked participants whether they felt they were able to access the HIV-related services (Yes/No) they needed. Participants indicated their perceived self-efficacy for being able to attend their scheduled care appointments. Specifically, using an 11-point rating scale, 0 = Not at all certain, 10 = Very certain, participants were asked 'How certain are you that you can keep your next doctor's appointment?'. In addition, participants indicated their level of difficulty getting to their pharmacy and HIV care providers by responding to the following items: 'On a scale from 0 to 10, 10 being very difficult, how difficult is it for you to get to your pharmacy?' and 'how difficult is it for you to get to your doctor?'.

Antiretroviral therapy receipt and adherence. Participants who were taking ART consented to three biweekly prospective unannounced cell phone-based pill counts. Unannounced pill counts are reliable and valid in assessing medication adherence.[37–41] In this study, we conducted unannounced cell phone-based pill counts using study-provided free cell phones. Participants were called at three unscheduled times over 5–6 weeks. Intervals between calls ranged from 12 to 16 days. The first of the three pill counts established the initial number of pills in possession, with the two subsequent

pill counts allowing for adherence calculations. Adherence was defined as the ratio of pills counted relative to pills prescribed and dispensed. Adherence was calculated for each ART medication and these values were averaged. For descriptive analyses, suboptimal adherence was defined categorically as ≥90% of medications taken as prescribed, a level of adherence below one that places patients at risk for developing HIV treatment resistance.[42–45]

HIV viral suppression. Using medical record chart-abstracted data, HIV RNA below detection (viral suppression) was defined as less than 100 copies/mL for uniformity across providers.

Syndemic and social-contextual dimensions

Depression symptoms. The Centers for Epidemiological Studies Depression scale (CESD) was used to assess symptoms of depression.[46] We administered the full 20-item scale that focussed on how often a participant had specific depression-related thoughts, feelings and behaviours in the past 7 days. Scores range from 0 to 60, and values greater than 16 indicate possible depression ($\alpha = 0.89$).

HIV-related stressful events. We assessed stressors specifically associated with HIV, including experiences of stigma, discrimination, disclosure, health etc. Participants were asked whether they experienced 18 stressful life events in the previous month.[47,48] HIV-related stressors were responded to dichotomously as 0 = *No* and 1 = *Yes*. We computed a HIV-related stress index score, with higher scores indicating a greater number of stressors ($\alpha = 0.76$).

Alcohol and drug use. To assess alcohol use, we administered the three-item consumption subscale of the Alcohol Use Disorders Identification Test (AUDIT-C).[49] The items reflect drinking frequency and quantity. For descriptive purposes, we used the continuous AUDIT scale score and we used the scale to indicate any alcohol use, as research shows that even modest use of alcohol has an adverse effect on HIV-related health outcomes.[50] We also screened for drug use with a multi-panel (12 drug) urine dip-test to detect common illicit drugs (Redwood Toxicology Laboratories, Santa Rosa, CA - Reditest-12). These tests are Food and Drug Administration (FDA) approved and are reliable and valid for initial drug screening.

Conspiracy beliefs and medical mistrust. Three items from the Medical Mistrust Index were adapted to assess medical conspiracy beliefs[51] ($\alpha = 0.89$). We also adapted three items from the Trust in Physician Scale[52] to assess trust in healthcare providers more broadly ($\alpha = 0.78$). Items for both measures were responded to on a five-point Likert scale (*1 = Strongly Agree*, *5 = Strongly Disagree*).

Social support. Level of social support was assessed through a 14-item scale designed to index emotional and tangible/practical sources of social support.[53] We specifically used the seven-item Emotional Support subscale ($\alpha = 0.76$, example item 'I feel a strong emotional bond with at least one other person') and the seven-item Tangible Support subscale ($\alpha = 0.75$, example item 'There is someone I can turn to for advice about handling problems with my family'). Responses were *1 = completely true*, *to 4 = completely false*, with higher scores indicating greater emotional and tangible support.

Procedures

Participants were recruited through passive community sampling with study announcements posted in multiple service settings. In addition, we relied heavily on snowball techniques to accrue this sample. Community distribution of study brochures was concentrated in local area businesses, waiting rooms of social service providers and infectious disease clinics throughout Atlanta, GA. For snowball sampling, we provided participants with three or four study brochures and asked them to let other people living with HIV know about the study.

At an initial office assessment, participants provided written informed consent and completed an audio-computer-assisted self-interview (ACASI) to collect demographic and health characteristics, syndemic conditions and social-contextual factors.[54] At this time, participants received training to conduct unannounced pill count assessments on the phone to monitor ART adherence over the subsequent 6 weeks. We also asked participants to provide a finger stick-obtained blood sample for Hepatitis C-Virus (HCV). antibody testing, a urine specimen to test for active drug use and to obtain their most recent HIV viral load and CD4 cell count results from their medical provider. Participants were reimbursed US$125 for completing all measures, pill counts and returning medical chart information. The University of Connecticut Institutional Review Board (IRB) approved all procedures.

Case matching

We used a case-matching procedure to control for years since testing HIV positive and to achieve proportional sized groups of cisgender women and cisgender men matched to the sample of transgender women.[55] Among participants, 70 persons self-identified as transgender women. We used a 1 : 1 case-matching procedure to obtain three gender subgroups matched on the number of years since participants had tested HIV positive (±2 years). We matched for years since testing HIV positive to control for time during which participants could potentially be linked and engaged in HIV care. Two transgender women did not provide the year that they tested HIV positive, and were therefore unmatched in the case-matching procedure. We therefore formulated three groups for analyses: 70 transgender women, 68 cisgender women and 68 cisgender men.

Statistical analyses

We first examined the sample demographics and health characteristics by comparing participants defined in the three gender subgroups. Comparisons were made using contingency table χ^2 tests for categorical variables and one-way analyses of variance for continuous variables. Significant differences were followed with post-hoc paired-cell partitioning for categorical analyses and least significant difference tests for continuous variables. Next, we examined the proportions of gender subgroups falling within each of the steps of the HIV continuum of care; linked, engaged, treated with ART, 90% adherent to ART and viral suppressed. These analyses used 3 (gender group) × 2 (HIV cascade indicator) contingency table χ^2 tests.

Finally, we examined logistic regression models to test the independent effects of intrapersonal and social factors in relation

to gender subgroups and HIV-related heath disparities on the HIV cascade. Because cisgender women and cisgender men did not differ along the HIV cascade, we collapsed these groups for further analyses. Using bivariate models at the $P<0.10$ level of significance, we identified mental health, substance use and social factors that differentiated transgender and cisgender subgroups on the HIV cascade. The main effects and interaction terms for significant mental health, substance use and social contextual characteristics in relation to the HIV cascade were then tested in multivariable models, controlling for participant age and education. Multivariable models defined significance as $P<0.05$.

Results

Bivariate comparisons of gender subgroups across demographic and health characteristics are shown in Table 1. Gender subgroups were mostly similar across key demographic characteristics, with the exceptions of age and education; transgender women were significantly younger than both cisgender subgroups and cisgender women had less education than cisgender men. Transgender women along with cisgender women reported more HIV symptoms than cisgender men. In addition, transgender women reported greater difficulty getting to their doctor and there was a trend towards transgender women having more difficulty getting to the pharmacy.

With respect to intrapersonal and social factors, results showed that transgender women reported the greatest level of depression symptoms, HIV-related stressors, were more likely to test positive for active drug use, indicate greater medical mistrust and reported the lowest degree of tangible social support (Table 2).

HIV continuum of care

We found that most of the participants reported having a current doctor, with no differences across gender subgroups (Table 3). Only three out of four participants indicated being engaged in care, as indexed by a care appointment in the previous 6 months, again with no association to gender identity groups. However, common markers for care engagement did differ by gender group, with transgender women least likely to know their CD4 cell count and viral load. Groups did not differ on perceived ability to access services or self-efficacy for keeping medical appointments.

Significant differences occurred across gender subgroups for receiving ART, adherence to ART and HIV viral suppression; transgender women indicated poorer outcomes on all three of these steps in the care continuum. Furthermore, differences between cisgender women and cisgender men were not significant at any step in the HIV continuum of care, except for viral suppression, where cisgender women were significantly more likely to be virally suppressed.

Factors associated with gender health disparities

Table 4 shows the results of multivariable logistic regression models testing the interaction between gender identity (transgender and cisgender) and intrapersonal and social factors that were significant ($P<0.10$) in bivariate main-effects analyses. When controlling for age and education, results show that the interaction between gender and tangible support significantly predicted not receiving ART, poorer ART adherence and non-viral suppression over and above all other factors. In each case, transgender women with less tangible

Table 1. Demographic and health characteristics of HIV-positive transgender women and cisgender women and men
** $P<0.01$, * $P<0.05$, *** $P<0.10$; ^{A,B} values with different superscripts differ significantly from each other at the $p<0.05$ level; M, mean; s.d., standard deviation; F, significance test; ART, antiretroviral therapy

	Transgender women		Cisgender women		Cisgender men		X^2
	n	%	*n*	%	*n*	%	
White	7	10	5	7	8	12	
African American	62	89	61	90	60	88	
Latino/Hispanic	1	1	2	3	0	0	2.72
Employed	7	10	8	12	5	7	
Unemployed	34	48	24	35	23	33	
Disability benefits	29	41	36	53	40	59	8.7
Income < US$10 000	54	77	54	79	48	71	1.5
Hepatitis C positive	10	16	11	17	10	15	1.7
CD4 <200 cells/cc^2	15	23	9	14	15	23	2.3
	M	s.d.	M	s.d.	M	s.d.	F
Age (years)	45.8^A	10.9	49.8^B	8.2	50.9^B	7.7	6.0**
Education (years)	12.3	1	11.8^a	2.0	12.7^B	1.8	4.2*
Years testing HIV+	12.5	8.2	13.3	7.9	13.3	8.2	0.2
CD4 count, cells/cc^2	408.7^A	257.1	572.6^B	326.5	500.6	594.2	2.4***
Log viral load	2.5^A	1.2	1.9^B	0.7	2.2	1.1	5.3**
HIV symptoms	4.1^A	3.9	4.2^A	3.7	2.5^B	3.0	5.0**
ART adherence	80.0^A	19.5	89.3^B	15.6	90.1^B	16.8	5.1**
Difficulty getting to pharmacy	2.6	3.0	2.0	3.1	1.4	2.2	2.7***
Difficulty getting to doctor	2.9	3.1	2.3	3.1	1.5	2.1	3.8*

Table 2. Syndemic and social-contextual factors among HIV-positive transgender women and cisgender women and men
** $P < 0.01$, * $P < 0.05$, *** $P < 0.10$; [A,B] values with different superscripts differ significantly from each other at the $p < 0.05$ level; M, mean; s.d., standard deviation; F, significance test; AUDIT-C, Alcohol Use Disorders Identification Test

	Transgender women		Cisgender women		Cisgender men		F
	M	s.d.	M	s.d.	M	s.d.	
Depression symptoms	20.7[A]	9.3	19.0	9.3	17.2[B]	8.6	2.5***
HIV-related stressors	4.3[A]	2.9	3.4[B]	2.4	3.1[B]	2.3	4.5**
AUDIT-C	6.5	3.6	7.1	3.6	7.1	3.5	0.5
Conspiracy beliefs	2.2	0.7	2.2	0.7	2.1	0.7	0.4
Medical mistrust	2.1[a]	0.9	2.0[A]	0.9	1.8[B]	0.7	2.8*
Emotional support	2.8	0.5	3.0	0.6	2.9	0.6	2.2
Tangible support	2.6[a]	0.6	3.0[B]	0.7	2.9[B]	0.7	4.0*
	n	%	*n*	%	*n*	%	X^2
Tested drug positive	44[A]	66	28[B]	43	37	56	6.8**
Alcohol use past month	39	55	31	43	34	47	2.1

Table 3. HIV-positive transgender women and cisgender women and men at each step along the HIV continuum of care
** $P < 0.01$, * $P < 0.05$; [A,B,C] values with different superscripts differ significantly from each other at the $p < 0.05$ level; ART, antiretroviral therapy. [D]<100 copies

	Transgender women		Cisgender women		Cisgender men		X^2
	n	%	*n*	%	*n*	%	
Linked to care	65	93	64	94	64	94	0.1
Engaged in care	53	76	52	76	50	74	0.1
Knows CD4 count	28[A]	40	42[B]	61	48[B]	71	14.0**
Knows HIV viral load	26[A]	37	39[B]	57	43[B]	63	10.4**
Able to access services	48	68	49	73	54	79	2.1
Appointment self-efficacy	9.0	1.5	9.3	1.7	9.5	1.1	1.1
Taking ART	57[A]	81	66[B]	97	66[B]	97	17.9**
$\geq$ 90% ART adherent	24[A]	42	41[B]	68	48[B]	72	12.9**
HIV suppressed[D]	41[A]	59	56[B]	82	46[C]	68	10.6**

Table 4. Multivariable models testing the interactions between gender identity (transgender/cisgender) × intrapersonal and social factors as predictors of HIV-related heath disparities
Note: age and education were controlled for in all models; ** $P < 0.01$, * $P < 0.05$. ART, antiretroviral therapy; M, mean; s.d., standard deviation; OR, odds ratio

	Not on ART					<90% adherent to ART					Viral non-suppression				
	Transgender		Cisgender			Transgender		Cisgender			Transgender		Cisgender		
	M	s.d.	M	s.d.	OR	M	s.d.	M	s.d.	OR	M	s.d.	M	s.d.	OR
Depression	20.1	9.2	17.8	8.8	0.96	21.4	10.3	19.5	9.4	0.99	23.3	10.5	22.6	9.8	1.01
Stressors	4.4	2.8	3.2	2.3	1.01	4.4	2.9	3.7	2.6	1.06	4.3	3.1	4.0	2.8	1.09
Medical mistrust	2.2	0.9	1.9	0.8	2.26	2.1	0.9	2.0	0.8	1.12	2.0	0.8	1.9	0.8	1.11
Tangible support	2.7	0.6	3.0	0.7	0.26**	2.5	0.6	2.8	0.7	0.59**	2.6	0.6	2.8	0.8	0.62*
	n	%	*n*	%		*n*	%	*N*	%		*n*	%	*N*	%	
Drug use	36	67	63	49	2.20	21	70	21	58	1.77	19	67	16	48	0.88

support experienced poorer health outcomes; were less likely to receive ART, were less adherent to ART, and were less virally suppressed.

Discussion

Health disparities between transgender persons and their cisgender counterparts were observed in receiving ART, adherence to ART and HIV viral suppression. We therefore replicated findings from previous research with racially and regionally different samples of transgender persons.[17–19] These differences occurred despite transgender women being equally likely to report linkage and engagement in HIV care. There were, however, indicators that suggest transgender women were not as fully engaged in care as cisgender persons matched on years since testing HIV positive, such as

being less aware of recent health status markers. Further, transgender women reported more difficulty in getting to their healthcare providers. Results also showed that transgender women were experiencing more symptoms of depression, HIV-related stress, and were significantly more likely to test positive for illicit drug use. Our results are therefore consistent with predictions made by the Syndemics Theory[23] – individuals with multiple and co-occurring psychosocial conditions demonstrated poorer health outcomes, and in this study, transgender women were characterised by syndemic conditions.

There were also differences observed in social and contextual factors, specifically medical mistrust and tangible support. Differences between groups were not found for conspiracy beliefs or emotional support. Multivariable models demonstrated that tangible support was the only factor independently associated with HIV care cascade outcomes. Transgender women with less tangible support experienced lower rates of receiving ART, adhering to ART and HIV viral suppression. This finding is consistent with previous research showing that tangible support is a key factor in HIV treatment outcomes,[33] and that transgender persons experience a lack of tangible support.[19] To our knowledge, this is the first study to put these two findings together to show that limited tangible support among transgender persons accounts, at least in part, for health disparities among people living with HIV.

The current study findings should be interpreted in light of their methodological limitations. The sample was one of convenience and cannot be considered representative of people living with HIV and receiving ART. We recruited the sample through distribution of study brochures to clinics, services and by providing participants with study brochures. We do not know whether gender groups differed in terms of where they received the study announcement or when they had heard about the study from a friend. In addition, the sample was largely African American and therefore limited in its generalisability in terms of ethnicity as well as geographical location. Although adherence data were collected over 6 weeks, the study was otherwise limited by its cross-sectional design. In addition, we tested a limited number of syndemic and social-contextual factors in relation to gender identity groups, as well as the HIV treatment cascade. We also focussed on recent depressive symptoms, recently experienced stressors and drug use close to the time of our assessment. These time intervals may be limiting because of the importance of considering chronic mental health and substance use in relation to health outcomes.[56,57] More comprehensive models with multiple candidate mechanisms that may account for health disparities among gender subgroups should therefore be investigated in future research. With these limitations in mind, we believe that the current study findings have implications for improving the health outcomes of transgender persons living with HIV.

Tangible support, as measured in the current study, reflects having people in one's social sphere available to help when needed. Unlike emotional support, tangible support may provide assistance needed for maintaining HIV care appointments and consistent engagement in care. While transgender women were just as likely to have a care-provider visit in the previous 6 months, there was a clear pattern of transgender women showing evidence of weaker ties to care, which may account for the observed lower rate of ART and ART adherence, as well as viral suppression. Fortunately, tangible support is amenable to interventions, including formal sources of support as can occur through case management, social services and peer navigation interventions. Opportunities to establish socially supportive relationships, such as through support groups, may also result in supportive relationships. In addition, interventions such as home visits provided by paraprofessionals have shown promising effects in improving the outcomes for children in HIV-affected families,[58,59] and these models may be emulated for use with other populations, such as transgender women. Ultimately, greater acceptance and elimination of gender and HIV stigmas will expand social spheres and provide social supports, which may ultimately promote greater health benefits.

Conflicts of interest

Seth Kalichman has received research grants from the National Institutes of Health and a training grant from the National Institute of Mental Health, and declares no other conflicts of interest. Devon Price, Stephanie Finneran, Redd Driver and Dominica Hernandez declare that they have no conflicts of interest.

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